In the Claims

Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please cancel claims 1-4 and 26-27 without prejudice or disclaimer.

Please amend pending claims 5-10, 13, 16-21, and 28-30 as noted below.

Listing of the Claims

1. Cancel

2. Cancel

3. Cancel

4. Cancel

5. (Currently Amended) The method of claim 6 ~~3~~ wherein the first representation includes as objects areas within a scan of an item having similar atomic number.

6. (Currently Amended) A method of screening items to detect target objects therein, comprising:

a) passing X-rays through an item from a plurality of different angles and with a plurality of energy levels;

b) detecting X-rays that have been attenuated by passing through the item to produce detected values representative of the attenuation of the X-rays by the item;

c) analyzing the detected values to produce a first representation of objects within the item, the objects in the first representation being based at least in part on a ratio of attenuation of x-rays having different energies;

d) performing a computed tomographic reconstruction of at least a portion of the detected values to produce a second representation of one or more objects within the item;

e) forming a third representation of objects in the item by combining the first and second representations, and

f) ~~The method of claim 5~~ wherein forming the third representation includes altering the first representation by changing the estimate of the atomic number of an object based on the second representation of objects.

7. (Currently Amended) The method of claim 6 ~~5~~ wherein the first representation represents as objects areas within an item ~~a scan of items~~ of similar atomic number and mass.

8. (Currently Amended) A method of screening items to detect target objects therein, comprising:

a) passing X-rays through an item from a plurality of different angles and with a plurality of energy levels;

b) detecting X-rays that have been attenuated by passing through the item to produce detected values representative of the attenuation of the X-rays by the item;

c) analyzing the detected values to produce a first representation of objects within the item, the objects in the first representation being based at least in part on a ratio of attention of x-rays having different energies;

d) performing a computed tomographic reconstruction of at least a portion of the detected values to produce a second representation of one or more objects within the item;

e) forming a third representation of objects in the item by combining the first and second representations; and

f) ~~The method of claim 3~~ wherein forming the third representation includes altering a representation of an object in the first representation based on the second representation indicating that a plurality of overlapping objects are represented as one object in the first representation.

9. (Currently Amended) The method of claim 83 wherein the second representation of objects is based on density of objects.

10. (Currently Amended) The method of claim ~~83~~ 83 wherein analyzing the detected values includes forming a two dimensional array of pixels representing the item.

11. (Original) The method of claim 10 wherein analyzing the detected values includes identifying regions in the two dimensional array of pixels in which the pixels have similar atomic number and mass.

12. (Original) The method of claim 11 wherein regions of similar atomic number are determined from pixels having similar ratios of attenuation of x-rays at two different energies and mass is determined from pixels having similar attenuation of x-rays at the same energy.

13. (Currently Amended) The method of claim ~~83~~ 83 wherein producing the first representation includes assigning an effective atomic number to each object.

14. (Original) The method of claim 13 additionally comprising selecting objects of interest based in part on the effective atomic numbers and wherein performing the computed tomographic reconstruction is altered by the selected objects of interest.

15. (Original) The method of claim 14 wherein the computed tomographic reconstruction reconstructs a slice of the item selected to pass through an object of interest.

16. (Currently Amended) The method of claim ~~83~~ 83 wherein the first representation represents objects in a two dimensional coordinate system and the second representation represents objects in a three dimensional coordinate system.

17. (Currently Amended) The method of claim ~~83~~ 83 wherein the first representation is formed from an image of the item from only one view.

18. (Currently Amended) A method of screening items to detect target objects therein, comprising:

a) passing X-rays through an item from a plurality of different angles and with a plurality of energy levels;

b) detecting X-rays that have been attenuated by passing through the item to produce detected values representative of the attenuation of the X-rays by the item;

c) analyzing the detected values to produce a first representation of objects within the item, the objects in the first representation being based at least in part on a ratio of attenuation of x-rays having different energies;

d) performing a computed tomographic reconstruction of at least a portion of the detected values to produce a second representation of one or more objects within the item;

e) forming a third representation of objects in the item by combining the first and second representations; and

f) ~~The method of claim 3~~ wherein forming a third representation includes altering the effective atomic number and mass associated with objects contained in the first representation based on density of objects contained in the second representation.

19. (Currently Amended) The method of claim 18 ~~3~~ additionally comprising automatically identifying a target object based on the third representation.

20. (Currently Amended) The method of claim 18 ~~3~~ wherein the second representation of objects includes a confidence associated with each object.

21. (Currently Amended) The method of claim 18 ~~3~~ wherein analyzing the detected values includes:

i) forming a plurality of pixels and

ii) grouping pixels of similar characteristics and assigning a confidence level to each grouping.

22. (Original) The method of claim 21 wherein assigning a confidence level includes assigning a confidence level based on the compactness of the grouping.

23. (Original) The method of claim 21 wherein assigning a confidence level includes assigning a confidence level based on the connectiveness of the grouping.

24. (Original) The method of claim 21 wherein assigning a confidence level includes assigning a confidence level based on the gradient of the grouping.

25. (Original) The method of claim 21 wherein assigning a confidence level includes assigning a confidence level based on the histogram spread of the grouping.

26. Cancel

27. Cancel

28. (Currently Amended) The method of claim 32 ~~27~~ wherein indicating an object includes indicating the object is a target.

29. (Currently Amended) The method of claim 32 ~~27~~ wherein indicating an object includes indicating an object and a probability the object is a target.

30. (Currently Amended) The method of claim 32 ~~27~~ wherein indicating an object includes comparing values indicative of effective atomic number and physical extent of objects to predetermined information on the effective atomic number and physical extent of target objects.

31. (Original) The method of claim 30 wherein the predetermined information includes a histogram of probabilities that an object having a combination of atomic numbers and physical dimensions is a target object.

32. (Currently Amended) A method of screening items to detect target objects therein, comprising:

a) passing X-rays through an item from a plurality of different angles and with a plurality of energy levels;

b) detecting X-rays that have been attenuated by passing through the item to produce detected values representative of the attenuation of the X-rays by the item;

c) analyzing the detected values to produce a first representation of objects within the item, the first representation being based at least in part on a ratio of attention of x-rays having different energies;

d) performing a computed tomographic reconstruction of at least a portion of the detected values to produce a second representation of one or more objects within the item;

e) indicating an object based at least in part on the first representation[[,]] and the second representation ~~and the confidence~~, wherein the object is ~~objects are~~ indicated when it has ~~they have~~ an effective atomic number in a predetermined range and a predetermined proximity to another object that has an effective atomic number indicative of metal.